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## 2015 FORD Flex OEM Service and Repair Workshop Manual

[Go to manual page](#)

- Check the E clutch for a does not apply condition. REFER to: [E Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the D clutch for an always applied condition. REFER to: [D Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the A clutch for a slipping apply condition. REFER to: [A Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the C clutch for a slipping apply condition. REFER to: [C Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the F clutch for a slipping apply condition. REFER to: [F Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

- **No 5-6 shift/harsh/soft/slipping**

- Check the D clutch for a does not apply condition. REFER to: [D Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the C clutch for an always applied condition. REFER to: [C Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the A clutch for a slipping apply condition. REFER to: [A Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the E clutch for a slipping apply condition. REFER to: [E Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the F clutch for a slipping apply condition. REFER to: [F Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

- **No 6-7 shift/harsh/soft/slipping**

- Check the C clutch for a does not apply condition. REFER to: [C Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the A clutch for an always applied condition. REFER to: [A Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the D clutch for a slipping apply condition. REFER to: [D Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the E clutch for a slipping apply condition. REFER to: [E Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the F clutch for a slipping apply condition. REFER to: [F Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

- **No 7-8 shift/harsh/soft/slipping**

- Check the B clutch for a does not apply condition. REFER to: [B Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

## PINPOINT TEST I : DOWNSHIFT QUALITY - SINGLE GEAR AFFECTED

### Normal Operation and Fault Conditions

- **No 10-9 shift/harsh/soft/slipping**
  - Check the E clutch for a does not apply condition. REFER to: [E Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the D clutch for an always applied condition. REFER to: [D Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the B clutch for a slipping apply condition. REFER to: [B Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the C clutch for a slipping apply condition. REFER to: [C Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the F clutch for a slipping apply condition. REFER to: [F Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- **No 9-8 shift/harsh/soft/slipping**
  - Check the D clutch for a does not apply condition. REFER to: [D Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the C clutch for an always applied condition. REFER to: [C Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the B clutch for a slipping apply condition. REFER to: [B Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the E clutch for a slipping apply condition. REFER to: [E Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the F clutch for a slipping apply condition. REFER to: [F Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- **No 8-7 shift/harsh/soft/slipping**
  - Check the C clutch for a does not apply condition. REFER to: [C Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the B clutch for an always applied condition. REFER to: [B Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the D clutch for a slipping apply condition. REFER to: [D Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the E clutch for a slipping apply condition. REFER to: [E Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
  - Check the F clutch for a slipping apply condition. REFER to: [F Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

- Check the F clutch for an always applied condition. REFER to: [F Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the A clutch for a slipping apply condition. REFER to: [A Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the C clutch for a slipping apply condition. REFER to: [C Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the D clutch for a slipping apply condition. REFER to: [D Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

- **No 3-2 shift/harsh/soft/slipping**

- Check the low one-way clutch for slipping. REFER to: [Low One-Way Clutch Assembly](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check E clutch for an always applied condition. REFER to: [E Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the A clutch for a slipping apply condition. REFER to: [A Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the C clutch for a slipping apply condition. REFER to: [C Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the D clutch for a slipping apply condition. REFER to: [D Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

- **No 2-1 shift/harsh/soft/slipping**

- Check the E clutch for a does not apply condition. REFER to: [E Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the C clutch for an always applied condition. REFER to: [C Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the A clutch for a slipping apply condition. REFER to: [A Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the D clutch for a slipping apply condition. REFER to: [D Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).
- Check the low one-way clutch for damage or wear. REFER to: [Low One-Way Clutch Assembly](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

**Possible Sources**

- Clutch stuck off
- Clutch stuck on
- Clutch slipping

**Diagnostic steps are not provided for this symptom or DTC. REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).**

- **Only gears 1, 2, 3 available**

- Check the F clutch for a does not apply condition. REFER to: [F Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

- **Slip on hard acceleration in 1A and 2A**

- Check the low one-way clutch for a slipping condition. REFER to: [Low One-Way Clutch Assembly](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

- **No engine braking in 1M or 2M**

- Check the B clutch for a does not apply condition. REFER to: [B Clutch](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

**Possible Sources**

- Clutch stuck on
- Clutch stuck off

**Diagnostic steps are not provided for this symptom or DTC. REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).**

## **PINPOINT TEST K : TORQUE CONVERTER CLUTCH OPERATION**

### **Normal Operation and Fault Conditions**

- **Torque converter clutch (TCC) does not apply**

- Access the PCM (powertrain control module) / TCM (transmission control module) and monitor parameter identifications (PIDs) TCC, TC\_SLIPDSD and TC\_SLIPACT. Road test the vehicle, making sure TCC (torque converter clutch) lockup is attempted. If the parameter identifications (PIDs) indicate the TCC (torque converter clutch) is slipping when lockup is commanded, check the TCC (torque converter clutch) for a does not apply condition. REFER to: [Torque Converter Clutch \(TCC\)](#) (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

- **Torque converter clutch (TCC) always applied**

- Access the PCM (powertrain control module) / TCM (transmission control module) and monitor parameter identifications (PIDs) TCC, TC\_SLIPDSD and TC\_SLIPACT. Start the engine and select Drive. If the parameter identifications (PIDs) indicate the TCC (torque converter clutch) does not slip and the engine lugs or stalls when Drive is selected, check the TCC (torque converter clutch) for an always applied condition. REFER to: [Torque Converter Clutch \(TCC\)](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

- **Torque converter clutch (TCC) cycles, shudders, chatters**

## Normal Operation and Fault Conditions

- **Whine noise**

- Some vehicles equipped with a 10R80 transmission may exhibit a whine noise. This may occur at idle and while driving coming from the bell housing and front pan area of the transmission. The whine noise may become louder when at operating temperature and increases with higher engine RPM in the Park position. A small amount of whine noise is considered to be characteristic of the 10R80 transmission due to the offset gear drivetrain in the front support and has no effect on durability.

- **2WD - Clunk noise when shifting from Reverse to Drive or Drive to Reverse**

- 2WD drive vehicles are equipped with an anti-ting washer between the transmission output shaft and the transmission output shaft flange. When the load on the driveshaft changes, like when shifting from Reverse to Drive, the anti-ting washer will absorb normal movement between the 2 components. If the component interface is dry, corroded, or otherwise sticky, then a slip/stick condition can result. A slip/stick condition produces more than normal forces on the anti-ting washer and may result in an objectionable clunk noise. A light coating of high temperature grease applied to both sides of the anti-ting washer and the entire transmission output shaft spline area will reduce the clunk noise down to a normal acceptable level.
- To remove the transmission output shaft flange and grease the output shaft and anti-ting washer, REFER to: [Output Shaft Seal\(307-01A Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Removal and Installation\)](#).

- **Noise**

- Check the engine drive accessories, suspension, driveline components, CV (constant velocity) joints and transmission for noise.REFER to: [Noise, Vibration and Harshness \(NVH\)\(100-04 Noise, Vibration and Harshness, Diagnosis and Testing\)](#).  
REFER to: [Noise, Vibration and Harshness \(NVH\)\(100-04 Noise, Vibration and Harshness, Diagnosis and Testing\)](#).

- **Vibration**

- Check the engine drive accessories, suspension, driveline components, CV (constant velocity) joints and transmission for vibration.REFER to: [Noise, Vibration and Harshness \(NVH\)\(100-04 Noise, Vibration and Harshness, Diagnosis and Testing\)](#).  
REFER to: [Noise, Vibration and Harshness \(NVH\)\(100-04 Noise, Vibration and Harshness, Diagnosis and Testing\)](#).

## Possible Sources

- Slip/stick condition at the transmission output flange/anti-ting washer interface
- Engine drive accessories
- Suspension components
- Driveline components
- Transmission components

Sample

## Preliminary Inspection

The preliminary inspection will:

1. Find obvious causes for a concern by performing under hood and under vehicle visual inspections.
2. Adjust the selector lever linkage. (if equipped)
3. Collect a fluid sample.

## PID Monitor/record on Road Test

Using the diagnostic trouble codes (DTCs) and freeze frame data as a guide, prepare the scan tool to make a recording of the event. Select the transmission parameter identifications (PIDs) that are related to the concern as well as parameter identifications (PIDs) for general automatic transmission operation. Since you may only get one or two chances to duplicate the concern, it is better to have more data on the recording. If possible, set datalogger to automatically start recording when a PID (parameter identification) reaches a certain value. For example, you might want the recording to start 6 seconds before a fault PID (parameter identification) changes from No Fault to Fault.

The PCM (powertrain control module) / TCM (transmission control module) may set a DTC (diagnostic trouble code) after the first occurrence of the fault. Some diagnostic trouble codes (DTCs) may require up to 5 consecutive occurrences before setting. Drive the vehicle in a manner similar to the freeze frame data conditions if possible. If no freeze frame data is available, then perform this road test:

- Drive the vehicle normally for 1-3 minutes to warm up the fluid.
- From a stop, accelerate the vehicle to 100 kph (62 mph) with the shifts occurring at approximately 2000 rpm. Stay in 10th gear for 30 seconds or until the TCC (torque converter clutch) applies. Repeat this two times.
- From a stop, accelerate the vehicle to 100 kph (62 mph) with the shifts occurring at approximately 3000 rpm. Stay in 10th gear for 30 seconds or until the TCC (torque converter clutch) applies. Repeat this two times.

After the road test, review the recording and check for newly set diagnostic trouble codes (DTCs). Electrical fault diagnostic trouble codes (DTCs) are diagnosed in pinpoint tests. Hydraulic, mechanical, and performance fault diagnostic trouble codes (DTCs) are diagnosed in component tests. Use the DTC (diagnostic trouble code) chart for detailed diagnosis:

REFER to: [DTC Chart and Pinpoint Tests - 2.7L EcoBoost \(238kW/324PS\)](#)

(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

REFER to: [DTC Chart and Pinpoint Tests - 3.3L Duratec-V6](#)

(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).



- Clear adaptive tables – required for overhaul and when the solenoid body has been replaced.
- Reset misfire monitor – required whenever the transmission has been removed.
- Road test until the transmission fluid is up to operating temperature. This is required to make sure transmission fluid cooler is full of transmission fluid.
- Perform adaptive drive cycle – required if the adaptive tables were cleared.
- Set transmission fluid level – transmission fluid is now at the correct temperature and the transmission fluid cooler has been purged of air.
- Verify the repair resolved the concern – this is also known as the post repair road test.

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Sample

PCM (powertrain control module)	P0706:00	Transmission Range Sensor "A" Circuit Range/Performance: No Sub Type Information	<a href="#">GO to Pinpoint Test C</a>
PCM (powertrain control module)	P0707:00	Transmission Range Sensor "A" Circuit Low: No Sub Type Information	<a href="#">GO to Pinpoint Test C</a>
PCM (powertrain control module)	P0708:00	Transmission Range Sensor "A" Circuit High: No Sub Type Information	<a href="#">GO to Pinpoint Test C</a>
PCM (powertrain control module)	P0709:00	Transmission Range Sensor "A" Circuit Intermittent: No Sub Type Information	<a href="#">GO to Pinpoint Test C</a>
PCM (powertrain control module)	P0710:00	Transmission Fluid Temperature Sensor "A" Circuit: No Sub Type Information	<a href="#">GO to Pinpoint Test B</a>
PCM (powertrain control module)	P0711:00	Transmission Fluid Temperature Sensor "A" Circuit Range/Performance: No Sub Type Information	<a href="#">GO to Pinpoint Test B</a>
PCM (powertrain control module)	P0712:00	Transmission Fluid Temperature Sensor "A" Circuit Low: No Sub Type Information	<a href="#">GO to Pinpoint Test B</a>
PCM (powertrain control module)	P0713:00	Transmission Fluid Temperature Sensor "A" Circuit High: No Sub Type Information	<a href="#">GO to Pinpoint Test B</a>
PCM (powertrain control module)	P0715:00	Input/Turbine Shaft Speed Sensor "A" Circuit: No Sub Type Information	<a href="#">GO to Pinpoint Test D</a>
PCM (powertrain control module)	P0716:00	Input/Turbine Shaft Speed Sensor "A" Circuit Range/Performance: No Sub Type Information	<a href="#">GO to Pinpoint Test I</a>
PCM (powertrain control module)	P0717:00	Input/Turbine Shaft Speed Sensor "A" Circuit No Signal: No Sub Type Information	<a href="#">GO to Pinpoint Test D</a>